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FITTING PARTICULARLY FOR HIGH-PRESSURE PIPES

DESCRIPTION

The present invention refers to a fitting particularly for high-pressure pipes.

As known, there are numerous types of fittings for a wide variety uses.

In particular, fittings for high-pressure pipes suitable for use on industrial building machines, such as earth-moving machines or lifting machines and the like, must be able to be made easily, also in a building yard, and ensure an excellent seal together with good strength and long-lastingness.

Normally, known fittings have a nut suitable for hydraulic connection with a connection element, which can be a pipe union or similar that is held at the end of the high-pressure pipe through an additional element, which can be a ring fixed integrally to the end of the pipe.

The holding of the ring to the pipe is made essentially by bending the end of the pipe by about 90° so as to form a small collar, obtained by squashing of the material, which prevents the slipping of the ring from the pipe and consequently also from the nut.

This technical solution, for example, has the drawback that the small collar that is made has a lower thickness than that of the walls of the pipe becoming a weak point thereof.

Moreover, the ring must be slotted onto the pipe at a calibrated distance from its edge to be bent making such an operation complex.

Moreover, the ring must also be held radially by the pipe, otherwise it tends to slip off both due to the operating pressure and when the nut is tightened.

Last but not least, the particular squashing processing by dragging of the small collar means that its front surface has an uncontrolled degree of roughness that could compromise the seal with the gasket with which it is associated.

The technical task proposed of the present finding is that of eliminating the aforementioned drawbacks of the prior art.

In this technical task an important purpose of the finding is to devise a fitting that has the front surface in contact with the sealing gasket that has a predetermined degree of roughness such as to optimise the fluid-dynamic seal.

Yet another purpose of the finding is to make a fitting that prevents the possible slipping of the connection nut in time and that can have its front surface treated to increase its mechanical hardness.

The last but not least purpose of the finding is to make a fitting in which the front surface has the same thickness as the wall of the pipe or even a greater thickness and that also allows the vibrations caused by its use in particular fields of use to be dampened.

This and other purposes are accomplished by a fitting particularly for high-pressure pipes, characterised in that it comprises means for holding a nut at the end of a high-pressure pipe defined by at least one deformation of the walls of the end zone of said pipe and reaction means for

keeping said deformation substantially unaltered.

Further characteristics and advantages of the invention shall become clearer from the description of a preferred but not exclusive embodiment of the fitting particularly for high-pressure pipes, according to the finding, illustrated for indicating and not limiting purposes in the attached drawings, in which:

- figure 1 is a top side section view of the end of the deformed pipe according to the finding;
- figure 2 is a top side view of the end of the pipe according to the finding;
- figure 3 is a top side section view of the cap according to the finding;
- figure 4 is a top side section view of the pipe with the cap according to the finding;
- figure 5 is a top side section view of the pipe with the first bend according to the finding;
- figure 6 is a top side section view of the pipe with the second bend according to the finding.

With particular reference to the figures described above, the fitting particularly for high-pressure pipes according to the finding, wholly indicated with reference numeral 1, comprises means, wholly indicated with reference numeral 2, for holding a nut 3 at the end of a high-pressure pipes 4.

The holding means 2 are defined by at least one deformation 5 of the walls of the end zone of the pipe 4.

Moreover, there are reaction means, generically indicated

with 6, for keeping the obtained deformation 5 substantially unaltered.

In particular, the deformation 5 comprises various widenings extending annularly on the end of the pipe 4 with different sized diameters and more precisely it comprises a first and a second widening 7 and 8, the latter having a greater diameter than the first widening.

In a first technical solution the reaction means 6 comprise a cap 9 having a flaring head 10 and at least one annular rib 11, and more precisely three ribs 11 housed on its cylindrical body 12 engaged on the inner surface of the first widening 7.

The three ribs 11, as well as holding the cap inside the pipe, also make a fluid-sealing barrier.

In a second technical solution, the reaction means comprise a first bend 13 extending radially with respect to said deformation 5.

The first bend 13 has, in a variant embodiment, a second bend 14 extending parallel to the axis of the pipe 4.

Advantageously, the first and second bend 13 and 14 define a stiffening for the first and second widening 7 and 8.

Indeed, the presence of the first bend 13 or of the cap 9 on the end of the pipe 4 allow the deformation 5 and in particular the configuration of the first and second widening 7 and 8 to remain unaltered when the nut 3 is screwed onto a connection element 15, which can, for example, be a pipe union or similar.

The nut 3, indeed, screwing with the connection element 15 going into abutment against the second widening 8 would tend to deform it without either the cap 9 or the first bend 13. The fitting also has engagement means, indicated with 18, with a first sealing gasket 19 with the connection element 15.

The engagement means are arranged at the front end of the pipe and are respectively defined by the front surface of the head 10 of said cap or by the front surface of the first bend 13.

Thanks to this solution it is possible to carry out a degree of processing of the surface in contact with the gasket 19 so as to obtain a perfect seal with it (controlled roughness).

For example, the front surface of the cap, as well as having a greater thickness with respect to the walls of the pipe, can also be subjected to heat treatment so as to increase its hardness.

In the case of use of the cap 9, the fitting has second engagement means with a second gasket 20.

In particular, the second engagement means are defined by the inner seat determined by the second widening 8 suitable for housing the second gasket 20 that engages with the head 10 of the cap 9.

In this way a further advantage is obtained determined by the presence on the fitting of two gaskets 19 and 20 that carry out a dampening of the vibrations from the connection element to the pipe and vice-versa above all if mounted on industrial

building machines, as is usually the case.

Also forming the object of the present finding is a process for making a fitting particularly for high-pressure pipes that consists of slotting the nut 3 in the pipe 4 and radially deforming the end zone of the pipe through a roto-translating tool.

Thereafter, the reaction means are made for keeping the deformation substantially unaltered when subjected to the pulling force of the nut when it is associated with a connection element.

In particular, the making of the reaction means consists of introducing a cap in the end of said pipe or of making a bend radially to said pipe.

The finding thus conceived can undergo numerous modifications and variants, all of which are covered by the inventive concept; moreover, all of the details can be replaced with technically equivalent elements.

In practice, the materials used, as well as the sizes, can be whatever according to the requirements and the state of the art.